Andrew P. Dumas

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Work Experience

July 2012-present | Signal Processing Engineer, MIT Lincoln Laboratory, Lexington, MA
Bioengineering Systems and Technologies
Develop algorithms for gait analysis using wearable inertial sensors. Data analysis on a wide range of biomedical projects involving real-time MRI of speech, auditory physiology, gait during load carriage, and thermal heat strain.

July 2010-Jul. '12 | Research Technologist, Massachusetts General Hospital, Charlestown, MA
Hemorrhagic Stroke Research Program and Athinoula A. Martinos Center for Biomedical Imaging
Conducted research investigating decreased vascular reactivity in Cerebral Amyloid Angiopathy using functional MRI to model hemodynamic response. Implemented algorithms in MATLAB for non-linear curve fitting, general linear modeling, and image processing.

June 2010-Aug. '10 | Research Student, Beth Israel Deaconess Medical Center, Boston, MA
Cardiac MRI Department
Created and tested algorithms to map T1 in phantoms and in human cardiac tissue, with emphasis on algorithm speed and robustness as well as rapid imaging acquisition time.

Education

MA, Biomedical Imaging
Graduated Aug. 2010
Boston University, Boston, MA
School of Graduate Medical Sciences

BS, Biomedical Engineering
Graduated May 2009
Member, *Alpha Eta Mu Beta* (Biomedical Engineer Honor Society)
Boston University, Boston, MA
College of Engineering

Relevant Coursework

Applied Bioinformatics
Control Systems
Imaging Theory & Image Processing
Signals and Systems
Biological & Environmental Acoustics
Engineering Economics
Logic Design using Verilog
Solid Biomechanics
Biomedical Signal Measurement
Head and Neck Anatomy
Methods of Functional Neuroimaging
Intellectual Assets

Project Experience

Sep. '09-Aug. '10 | *Development of an Offline Tool for Susceptibility Weighted Image (SWI) Processing using Matlab*
MA Thesis
Developed a tool using Matlab to process MRI phase and magnitude images and output images with susceptibility weighted contrast. Tested the algorithm using human brain images acquired with custom SWI (T_2*-weighted) sequences. Created a GUI to facilitate offline processing.

Sep. '08-May '10 | *Simulating Echolocation using Computational Models of Auditory Physiology*
Senior Project
Collected ultrasonic echoes in response to a synthetic "chirp" characterizing common obstacles (such as chairs, tables, walls, etc.) using an ultrasonic emitter and binaural detectors to mimic echolocation. Developed algorithms to estimate object distance and azimuth and to classify object based on previous data.

Computer & Technical Skills

Programming: Matlab (GUI development, statistical analysis, machine learning, visualization), Mathematica, Perl, BASH shell scripting
Imaging: MR Spectroscopy, fMRI Acquisition, FreeSurfer, FSL, SPM8, Siemens and Philips MRI Scanner operation, MRI Magnet Safety, NIH Human Subjects Certification
General Computing: Linux/Unix, Subversion, Git